WE CLAIM:

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1. A method for manufacturing a printed circuit board drilling machine having a worktable, a spindle, a drill bit and a controller configured to control the operation of the drilling machine, the method comprising the steps of:

configuring the drilling machine to drill to a point in a work piece;

configuring the drilling machine to retract said drill bit a retract distance, said retract distance configured such that a tip end of said drill bit remains below a top surface of said work piece,

configuring the drilling machine to drill a distance greater than said retract distance into said work piece.

2. The method of Claim 1, further including configuring the drilling machine to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached.

3. The method of Claim 2, further including configuring the drilling machine to completely withdraw said drill tip from said work piece after said final depth is reached.

4. The method of Claim 1, further including configuring the controller to receive said retract distance from an operator.

5. The method of Claim 1, further including configuring the controller to calculate said retract distance from a set of operational data that is inputted into said controller by an operator.

6. The method of Claim 1, further including configuring the controller to receive data indicating a stack height and a number of increments from an operator and configuring the controller to calculate the retract height from said stack height and said number of increments.

7. The method of Claim 1, further including configuring the controller to receive data indicating a hole depth and a number of increments from an operator and configuring the controller to calculate the retract height from said hole depth and said number of increments.

8. The method of Claim 1, further comprising configuring the drilling machine to drill to a first depth in said work piece and to completely withdraw said drill bit from said workpiece.

9. The method of Claim 1, further including configuring the drilling machine to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and configuring the drilling machine such that said retract distance is uniform.

10. The method of Claim 1, further including configuring the drilling machine to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and configuring the drilling machine such that said retract distance is non-uniform..

11. The method of Claim 1, further including configuring the drilling machine to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and configuring the drilling machine such that said distance greater than said retract distance is uniform.

12. The method of Claim 1, further including configuring the drilling machine to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and configuring the drilling machine such that said distance greater than said retract distance is non-uniform.

13. The method of Claim 1, further including configuring the drilling machine to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and configuring the drilling machine such that said retract distance is uniform and said distance greater than said retract distance is uniform.

14. The method of Claim 1, further comprising configuring the drilling machine to, while drilling a distance greater than said retract distance, reduce an axial speed of the drill bit from a first axial speed to a second axial speed when the drill bit passes a deceleration point.

15. The method of Claim 14, further comprising configuring the drilling machine to receive the deceleration point and the first axial speed from an operator.

16. The method of Claim 1, further comprising configuring the drilling machine to, while retracting said drill bit, to reduce an axial speed of the drill bit from a first axial speed to a second axial speed when the drill bit passes a deceleration point.

17. The method of Claim 16, further comprising configuring the drilling machine to receive the deceleration point and the first axial speed from an operator.

18. A printed circuit board drilling machine having a worktable, a spindle, a drill bit and a controller configured to instruct the drilling machine to drill to a point in a work piece, to retract said drill bit a retract distance, said retract distance configured such that a tip end of said drill bit remains below a top surface of said work piece and to drill a distance greater than said retract distance into said work piece.

19. The drilling machine of Claim 18, wherein said controller is further configured the to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached.

20. The drilling machine of Claim 19, wherein said controller is further configured to completely withdraw said drill tip from said work piece after said final depth is reached.

21. The drilling machine of Claim 18, wherein said controller is further configured to receive said retract distance from an operator.

22. The drilling machine of Claim 18, wherein said controller is further configured to calculate said retract distance from a set of operational data that is inputted into said controller by an operator.

23. The drilling machine of Claim 18, wherein said controller is further configured to receive data indicating a stack height and a number of increments from an operator and to calculate the retract height from said stack height and said number of increments.

24. The drilling machine of Claim 18, wherein said controller is further configured to receive data indicating a hole depth and a number of increments from an operator and to calculate the retract height from said hole depth and said number of increments.

25. The drilling machine of Claim 18, wherein said controller is further configured to drill to a first depth in said work piece and to completely withdraw said drill bit from said work piece.

26. The drilling machine of Claim 18, wherein said controller is further configured to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and said retract distance is uniform.

27. The drilling machine of Claim 18, wherein said controller is further configured to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and said retract distance is non-uniform..

28. The drilling machine of Claim 18, wherein said controller is further configured to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and said distance greater than said retract distance is uniform.

29. The drilling machine of Claim 18, wherein said controller is further configured to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and said distance greater than said retract distance is non-uniform.

30. The drilling machine of Claim 18, wherein said controller is further configured to retract said drill bit a retract distance and to drill to a distance greater than said retract distance until a final depth is reached and said retract distance is uniform and said distance greater than said retract distance is uniform.

31. The drilling machine of Claim 18, wherein said controller is further configured such that to reduce an axial speed of the drill bit, while drilling a distance greater than said retract distance, from a first axial speed to a second axial speed when the drill bit when the drill bit passes a deceleration point.

32. The drilling machine of Claim 31, wherein said controller is further configured to receive the deceleration point and the first axial speed from an operator.

33. The drilling machine of Claim 32, wherein said controller is further configured to, while said drill bit is being retracted, reduce from a first axial speed to a second axial speed when the drill bit passes a deceleration point.

34. The drilling machine of Claim 33, wherein said controller is further configured to receive the deceleration point and the first axial speed from an operator.

35. A method for operating a printed circuit board drilling machine having a worktable, a spindle, a drill bit and a controller configured to control the operation of the drilling machine, the method comprising the steps of:

drilling to a point in a work piece;

retracting said drill bit a retract distance, said retract distance configured such that a tip end of said drill bit remains below a top surface of said work piece,

drilling a distance greater than said retract distance into said work piece.

36. The method of Claim 35, further including repeatedly retracting said drill bit a retract distance and drilling a distance greater than said retract distance until a final depth is reached.

37. The method of Claim 36, further including completely withdrawing said drill tip from said work piece after said final depth is reached.

38. The method of Claim 35, further including receiving said retract distance from an operator.

39. The method of Claim 35, further including calculating said retract distance from a set of operational data that is inputted into said controller by an operator.

40. The method of Claim 35, further including receiving data indicating a stack height and a number of increments from an operator and configuring and calculating the retract height from said stack height and said number of increments.

41. The method of Claim 35, further including receiving data indicating a hole depth and a number of increments from an operator and calculating the retract height from said hole depth and said number of increments.

42. The method of Claim 35, further comprising drilling to a first depth in said work piece and completely withdrawing said drill bit from said workpiece.

43. The method of Claim 35, further including retracting said drill bit a retract distance and drilling to a distance greater than said retract distance until a final depth is reached, wherein said retract distance is uniform.

44. The method of Claim 35, further including retracting said drill bit a retract distance and drilling to a distance greater than said retract distance until a final depth is reached, wherein said retract distance is non- uniform.

45. The method of Claim 35, further including retracting said drill bit a retract distance and drilling to a distance greater than said retract distance until a final depth is reached, wherein said distance greater than said retract distance is uniform.

46. The method of Claim 35, further including retracting said drill bit a retract distance and drilling to a distance greater than said retract distance until a final depth is reached, wherein said distance greater than said retract distance is non-uniform.

47. The method of Claim 35, further including retracting said drill bit a retract distance and drilling to a distance greater than said retract distance until a final depth is reached, wherein said aid retract distance is uniform and said distance greater than said retract distance is uniform.

48. The method of Claim 35, further comprising, while drilling a distance greater than said retract distance, reducing an axial speed of the drill bit from a first axial speed to a second axial speed when the drill bit passes a deceleration point.

49. The method of Claim 48, further comprising receiving the deceleration point and the first axial speed from an operator.

50. The method of Claim 35, further comprising, while retracting said drill bit, reducing an axial speed of the drill bit from a first axial speed to a second axial speed when the drill bit passes a deceleration point.

51. The method of Claim 50, further comprising receiving the deceleration point and the first axial speed from an operator.